Article

Ovarian vein thrombosis in a polytrauma patient

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TITLE OF CASE

Ovarian vein thrombosis in a polytrauma patient

SUMMARY

A young mother presented to a Major Trauma Centre (MTC) following a road traffic collision. Her admission computed tomography (CT) traumagram demonstrated liver and renal lacerations, spinal and pelvic fractures with no abnormalities of the ovarian veins. Her inpatient course was uncomplicated other than a sustained, isolated raised c-reactive protein (CRP). CT abdomen one week after injury demonstrated stable solid organ injuries and the additional, unexpected finding of a right ovarian vein thrombosis (OVT). A pragmatic approach was taken towards the management of the OVT given the haemorrhagic risk from her traumatic injuries. A multi-disciplinary, consultant-led plan was made to slowly increase enoxaparin to a therapeutic dose under close surveillance and to then switch to warfarin following an outpatient consultation with a consultant haematologist. A magnetic resonance venogram was performed after 3 months of anticoagulation and this demonstrated complete resolution of the OVT and normal appearances of the ovary.

BACKGROUND

This paper describes the first reported case of ovarian vein thrombosis (OVT) secondary to trauma. OVT is most commonly found in the post-partum patient [1,2] however other aetiologies include pelvic inflammatory disease (PID), gynaecological malignancy, pelvic surgery, sepsis and hyper-coaguable states.[3] There have also been a handful of case reports describing idiopathic OVT worldwide.[3]

OVT is a rare condition occurring in 1/600 to 1/2000 pregnancies [4,5] and is diagnosed on the right hand side in 70-90% of cases.[6,7] Presentation is usually with vague lower quadrant abdominal pain and occasionally a palpable mass.

Left untreated OVT can have potentially fatal consequences as pulmonary embolus develops in 25% of cases; other sequelae include ovarian infarction and sepsis.[8] Overall the associated mortality of OVT is

4%, although the highest rates of death are in cases associated with malignancy.[8,9]

Management is with anticoagulation although there are no national or internationally recognised guidelines for length of treatment or surveillance.[2]

CASE PRESENTATION

A 24 year old mother of 3 presented to a Major Trauma Centre as a trauma alert following a medium-speed road traffic collision. Pre-hospitally the patient received no tranexamic acid as she had no evidence of haemodynamic compromise. She remained haemodynamically stable throughout the remainder of her resuscitation and received no blood products. The patient underwent a "CT traumagram", of which our unit protocol includes a plain head followed by angiogram from the Circle of Willis to the lesser trochanters as a biphasic injection.

The patient was normally fit and well, a non-smoker with a BMI of 27. She had 3 healthy children via normal vaginal delivery and had no history of miscarriage. There was no significant family history or any risk factors identified for PID.

Her injuries included a grade 1 liver laceration, a grade 1 right renal laceration, a small amount of physiological free fluid in the pelvis, L4 and 5 transverse process fractures and right superior and inferior pubic rami fractures.

The patient was admitted to the ward under the Major Trauma Service team for analgesia and observation. On admission she was prescribed anti-embolism stockings and commenced prophylactic enoxaparin (40mg OD) at 24 hours as per hospital protocol.

The patient was kept in hospital for observation and physiotherapy assessment. The local liver surgery protocol is to perform interval CT liver scans at one week post-injury to identify any evidence of pseudoaneurysm and so the patient was kept as an inpatient until this occurred. She remained pain free from all injuries and began protected weight bearing with the physiotherapy team after 2 days.

INVESTIGATIONS

The patient's observations were within normal physiological limits throughout her entire stay. All blood

tests were normal other than an isolated raised c-reactive protein (CRP) that remained in-between 317–337 and remained raised until treatment of the OVT began. Investigations were conducted to identify a cause for the raised CRP and no evidence of infection or SIRS response was found.

After one week the interval liver CT demonstrated stable liver and renal lacerations with no evidence of post-traumatic pseudo-aneurysms or fistulae. However, the CT did reveal a right ovarian vein thrombosis not previously evident on the patient's initial CT traumagram (figures 1 and 2). These images were reviewed by a consultant gynae-radiologist at the local Women's Hospital and the findings verified.

Anti-phospholipid screen performed following diagnosis of ovarian vein thrombosis was negative.

DIFFERENTIAL DIAGNOSIS

The patient appeared clinically well. She improved every day in terms of her mobility and had suffered minimal levels of pain from her injuries throughout her stay. The clinical team were concerned about the isolated raised CRP as it was unusually high without any obvious cause and no associated rise in white cell count or pyrexia. Chest examination and radiograph ruled out lower respiratory tract infection and following removal of catheter all urine dips were negative for signs of infection. The patient had no traumatic wounds as possible sources for infection.

TREATMENT

The risk of haemorrhage from the solid organ injuries was discussed with the relevant teams at consultant level. Despite the stable appearance of the liver laceration the liver surgery team felt a cautious approach to anticoagulation was required. A treatment plan was devised by the haematology team and agreed upon by the liver surgeons and urologists. The eventual management was a gentle escalation of enoxaparin to 40mg BD and to then increase to the full therapeutic dose whilst being monitored as an inpatient. On discharge therapeutic enoxaparin was continued for one month before switching to warfarin following a consultant haematology clinic appointment. The full and total course of anticoagulation treatment was given for 3 months. In cases of post-partum OVT, most papers advocate the use of broad-spectrum due to the presumptive diagnosis of endometritis.[10] However, following discussion with the local gynaecology

team there was a consensus decision that in this case no antimicrobial therapy was indicated. The patient developed no infective complications throughout her course of treatment and recovery.

OUTCOME AND FOLLOW-UP

A repeat outpatient CT liver was requested by the liver surgeons 4 weeks post-discharge which demonstrated vast improvement of the liver laceration with no evidence of haemorrhagic complication from the anticoagulation. The patient was also followed up by the urology team in clinic with a DMSA renal scan showing equal spilt function and no evidence of extravasation. A magnetic resonance venogram (MRV) was performed at 3 months, after completion of a full course of anticoagulation. The MRV demonstrated a normal flow void within the right ovarian vein and normal appearances of the ovary suggesting appropriate vascularisation. In addition to the aforementioned imaging the patient was brought back to anticoagulation clinic 1 month after discharge where she was counselled and converted to warfarin therapy. She was also seen in the Major Trauma Service clinic where she reported no issues with pain and was mobilising well.

DISCUSSION

Already a rare diagnosis, OVT in this patient was an unexpected and incidental radiological finding. At our unit we regularly re-scan patients with solid organ injuries after a set period of time however we rarely perform repeat CTs on patients with pelvic injuries. It may be the case that women have gone undiagnosed with this condition.

As OVT has been previously described in patients following pelvic surgery and similar pathological processes could be occurring to produce an OVT in a trauma patient. It would be detrimental to suggest that every female trauma patient with pelvic injuries should receive a CT. However, it may be pertinent for patients diagnosed with “idiopathic” OVT that a full history should include specific questions about recent injuries including any history of domestic violence.

A well-known risk factor for development of deep vein thrombosis (DVT) is that of reduced mobility. This

is a risk factor that is commonly shared with trauma patients who may be put on bed rest for spinal injury or find mobilising difficult due to pain issues or lower limb fractures. In this case, although the patient began mobilising with physiotherapists within 48 hours of admission, her prescription was that of "protected" weight-bearing and would therefore have been considerably reduced compared to her normal daily level of activity for a young mother of 3. This reduced level of mobility leading to venous stasis may well have been a contributing factor in the development of an ovarian vein clot.

Currently there is no national or international guideline for treatment of OVT. A 2006 review of OVT cases in America discovered that recurrence rate of OVT is similar to that of lower limb DVT and the paper therefore suggested that treatment should mirror that of lower limb DVT management.[9] A complicating factor in trauma patients with OVT is weighing up the risk of thrombus extension versus haemorrhage from existing sites of injury. This case was handled with a multi-disciplinary approach at consultant level involving the Major Trauma Service, Urology, Liver Surgery, Radiology and Haematology consultants. The patient at all times was kept under close observation and it was ensured following discharge that she had regular follow up and imaging with the management teams.

LEARNING POINTS/TAKE HOME MESSAGES

- Trauma can be a cause of ovarian vein thrombosis in female patients with pelvic injuries
- Thrombotic events should be considered as a cause for isolated raised CRP where there is no evidence of infection
- Reduced mobility and bed rest following trauma is a potential risk factor in the development of ovarian vein thrombosis
- In cases of "idiopathic" OVT a full history should include questions to identify any episodes of trauma, including domestic abuse that will often not be disclosed without specific and tactful questioning
- Risk of bleeding vs risk of thrombotic events provide an additional layer of complexity when considering treatment of OVT in traumatic cases

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FIGURE/VIDEO CAPTIONS

Figure 1. Axial view demonstrating right OVT

Figure 2. Coronal view 1 demonstrating right ovarian vein thrombus

PATIENT'S PERSPECTIVE

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